

DOCUMENT RESUME

ED 372 100

TM 021 774

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TITLE Equity Issues in Performance Assessment. Undermining Gender Stereotypes: Examination Performance in the UK at 16.
PUB DATE Apr 94
NOTE 12p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 4-8, 1994).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Adolescents; Case Studies; Educational Discrimination; English; *Equal Education; Females; Foreign Countries; Males; Mathematics; *National Competency Tests; Performance; Questionnaires; Secondary Education; Sex Differences; *Sex Stereotypes; Surveys; *Test Bias; Test Use
IDENTIFIERS England; *General Certificate of Education; Performance Based Evaluation

ABSTRACT

Since its introduction in 1988 the General Certificate of Secondary Education (GCSE), the main public examination for pupils at age 16 in England, Wales, and Northern Ireland, has become an obvious area in which to investigate gender-related differences in performance. As a complex attainment test, the GCSE is largely made up of a coursework element that can be classified as performance assessment. In the autumn of 1992, the University of London Examinations and Assessment Council Research Section expanded work already in progress to analyze the actual performance of students on the GCSE in English and mathematics, and to investigate causes of differential performance in these subjects. Data came from nearly 3,000 examination papers, 200 questionnaire survey responses of school departmental heads, and case study investigations. Gender differences in English are found to be substantial and not decreasing, but gender differences in mathematics are decreasing and have narrowed to a 2% difference in favor of boys. The complex web of factors that causes these differences is discussed, particularly with regard to coursework and the impact on modifications planned for the GCSE. Five tables present study findings. (Contains 21 references.) (SLD)

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EQUITY ISSUES IN PERFORMANCE ASSESSMENT

Undermining gender stereotypes: examination performance in the UK at 16

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April 4th - 8th 1994

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INTRODUCTION

Gender-related differences in performance in public examinations in the U.K. have, since the early 1980's, generated much attention and debate which has been reported widely in the British press.¹ This interest in male/female result patterns covers the whole range of testing and examining in the British education system at present; from differentials in performance in national curriculum tests for 7 years olds to variations in male/female success rates at university degree level. It is only right that gender-related differences in outcomes are of major concern, because at some of the most important stages of examining the result patterns are changing and the old stereotypes no longer hold firm.

A good example of these changing patterns occurs within the GCSE (General Certificate of Secondary Education) - the main public examination for pupils in England, Wales and Northern Ireland at age 16. Since its introduction in 1988 the GCSE has become the obvious experiment, allowing us to investigate gender-related differences in performance. It introduced new structures of assessment, especially coursework (extended tasks which are teacher assessed) to compare with the older structures from the GCE (General Certificate in Education) 'O' level. The GCSE has better and more comprehensive reporting procedures, in terms of sensible statistics, associated with it than were ever present for the public examinations which it replaced (GCE 'O' level and CSE).

The GCSE is a complex attainment test which incorporates various assessment techniques. In the main, the GCSE is made up of a coursework element, assessed by the teacher and a final written component examined at the end of the two year course. Practical components are also incorporated into syllabuses which validate such techniques (e.g. science and foreign languages).

Coursework can be classed as performance assessment. However, even within the UK there has been difficulty in identifying an agreed perception of what constitutes coursework. Kingdon and Stobart (1988) state simply that coursework is 'defined as any teacher assessed component' (p 72). The 'official' view of what constitutes coursework is that offered by the Schools Curriculum and Assessment Authority (SCAA) in the document "GCSE/Key Stage 4: Standards for Assessment and Certification" (March 1992):

Coursework consists of in-course tasks set and undertaken according to conditions prescribed by an awarding body. Coursework tasks are integral to, rather than incidental to, the course of study. Coursework is marked by a candidate's own teacher according to criteria provided and exemplified by the awarding body - taking national requirements into account. It is moderated by the awarding body (no page).

The GCSE, which will be examined in 1994, will be a completely different animal to that introduced in 1988. In the summer of 1994, the GCSE will be used to test the end of Key Stage 4 (KS4) of the national curriculum in England and Wales. To fit this new role some major changes have been made to the GCSE: a maximum of 20% coursework in most syllabuses; a return to 100% examined syllabuses in mathematics and a reduction from 100% to 40% coursework in English syllabuses. This diminution of the contribution of coursework within the GCSE is indicative of governmental attitudes towards this assessment technique. Coursework is generally held in low esteem by those in power and therefore, any group performing well at coursework (especially girls in the UK) are faced with negative success.

In 1992 the University of London Examinations and Assessment Council (ULEAC) Research Section published a review of gender-related differences in the GCSE (Stobart et al, 1992a). The interest here stemmed from a professional involvement in examinations plus a growing concern as to why the male/female gaps in performance, which in some subjects were quite large, should be happening. The review considered and acknowledged the role of social and cultural factors and their influence on participation and performance in the GCSE, yet as those responsible for the provision of such examinations the reviewers were quite ignorant of how fair these tests were.

This review tentatively tried to gauge whether the structures and assessment techniques within the GCSE actually amplify or reduce the gender differences that already exist. One of the hypotheses at this stage was that coursework may have accounted for much of the advantage that girls demonstrated

¹ TES (1991 a, b, c, 1992); Education (1991); The Sunday Times (1992); The Independent (1992, 1993); The Guardian (1992).

over boys. There is a wide spread perception in the UK that while coursework generally benefits pupils it is the girls who gain from it most (TES 1991, 1992). There is some empirical support for this which demonstrates that there is a direct relationship between the improvement in girls' examination grades between 1985 and 1988 and the type and weighting of coursework in GCSE syllabuses (Quinlan, 1990). Yet, with further investigation this seemed to be an over simplification. In English, geography and history, subjects with substantial written coursework, differential performance between girls and boys was greater than for 'O' level (Stobart et al, op. cit.). However, it was noted that in French, which has no compulsory coursework, girls showed similar performance patterns to those in English.

Previous reviews of public examinations (e.g. Fawcett Society, 1987; The Mathematical Association, 1989) had worked only from judgements about what appeared to be biased. These critiques failed to consider actual performance of boys and girls on the assessment instruments themselves. It became obvious that analyses of performance on the various assessment techniques would be the essential corollary. In-depth analyses would, hopefully, get to the root of the problem; to find out how boys and girls engage with the tasks and content presented to them and what role the different assessment techniques used within the GCSE have to play in reducing or amplifying gender differences.

In the autumn of 1992, the ULEAC Research Section in collaboration with the National Foundation for Educational Research in the UK (NFER) expanded the work already started, to pursue the analysis of actual performance of pupils in GCSE English and mathematics and to investigate the causes of differential performance in these two GCSE subjects. Data for the study was collected through nearly 3,000 examination scripts, the total results from all ULEAC candidates taking GCSE English and mathematics, 200 questionnaire survey responses of school departmental heads and case study investigations. Evidence was collected that suggested that coursework plays only a minimal role in explaining patterns of performance and it is more likely to be the interaction of all the elements within the GCSE and the experiences that the candidates bring with them to these examinations that affect the outcomes of performance.

The following paper is a summary of the main findings of the research. What will be reported is **not** a detailed description of the work step by step as this is documented elsewhere. The reader is referred to the final report (Stobart et al, 1992b). The aim is to pose and answer a series of questions using the methodologies involved. The assumption is made that most readers will be more interested in answers to questions concerning the GCSE set-up and its affect on gender differentials in performance.

WHAT ARE THE PATTERNS OF GENDER DIFFERENCES AT GCSE AND HOW SUBSTANTIAL ARE THESE DIFFERENCES?

In analysing entry and result patterns for GCSE subjects some interesting figures emerged, some of which are as follows:

- i) more girls than boys enter for GCSE examinations. In 1992 girls provided 51.1% of the total GCSE entry, despite making up only 48.5% of the 16 year old cohort;
- ii) girls finish compulsory schooling better qualified in terms of the proportion of A-C grades gained in GCSEs than their male counterparts. In 1992 girls gained 7% more A-C grades than boys, this figure has increased from 4% in 1988, the first year of GCSE;
- iii) in 1991, in the core subjects of English and mathematics, entries from the 16 year old cohort were:
 - 89% of 16 year olds entered GCSE English - 92% of girls and 86% of boys;
 - 83% of 16 year olds entered GCSE mathematics - 88% of girls and 79% of boys.

These facts are not unimportant as such differences in entry policy must bear on the interpretation of the data, particularly if they represent lower attaining boys not being entered for these subjects while girls with similar performance levels are. Table 1 below shows entry and result patterns for twelve major GCSE subjects for 1992. What these figures show is that in only one of these subjects are boys substantially ahead of girls (biology). In all the other eleven subjects, girls are either substantially ahead of boys in the proportion of grades A-C obtained, or else the gap is very narrow between the

two genders, especially in the traditionally 'male' subjects. A word of caution here would be to remember that these figures are aggregated from numerous syllabuses, all with their own result patterns favourable to one gender or the other. As a summary of the overall picture they seem to offer a challenge to stereotyped perceptions which suggest that the UK examination system at 16 is failing the female population. The worry now should be the underachievement of boys relative to girls at this age.

Table 1
Percentage of male/female entry and grades A-C (all GCSE groups)
Main GCSE subjects 1992

Subject	% Entry Male	% A-C Male	% Entry Female	% A-C Female	Mean Difference % A-C (M-F)
Art/Design	48.2	43.9	51.8	60.4	-16.5
Biology	40.7	62.8	59.3	54.4	8.4
Chemistry	57.3	68.7	42.5	66.8	1.9
Combined Science	49.8	44.1	50.2	43.8	0.3
Economics	64.8	55.2	35.2	53.5	1.7
English	49.8	48.0	50.2	62.7	-14.7
English Lit.	47.0	52.3	53.0	65.3	-13.0
French	44.5	42.2	55.5	52.1	-9.9
Geography	56.9	48.1	43.1	53.5	-5.4
History	48.1	50.8	51.9	56.9	-6.1
Mathematics	48.3	46.9	51.7	44.8	2.1
Physics	70.1	65.1	29.9	71.7	-6.6

We should interpret the above result patterns with reference to the entry figures. What these figures seem to show is a highly selective female entry for physics, who perform very well, with a large proportion of girl 'conscripts' for biology, who underperform in relation to their male counterparts. In French and English literature the better results for females reflect 'volunteer' entries. The result patterns and gender differences in English and mathematics are quite striking if they represent the same cohort taking both. The gender differences in GCSE English are substantial and show no sign of decreasing. Girls are currently gaining 15% more A-C grades than boys - a pattern that has been repeating itself since the introduction of the GCSE and one that occurs in courses including final examinations as well as 100% coursework syllabuses. In GCSE mathematics the gender differences in performance which have generally favoured boys are steadily decreasing and have narrowed to the extent that boys gain only 2% more grades A-C than girls. One important caveat here, however, is the role that the tiered entry system plays in the mathematics result patterns. GCSE mathematics has three tiers of entry (lower, middle and higher, each with restricted grade ranges) and more girls than boys are entered for the middle tier with its maximum grade C. The gap in performance between male and females in mathematics may be decreasing but more girls than boys obtain the key grade C from the middle tier, which has consequences for the girls' participation in advanced level study of mathematics. The purpose of this statistical review has been to establish that there are different take-up and outcomes by gender in the current GCSE. Taking this as a starting point, the next step was to investigate more fully the component parts of the GCSE to gauge their individual impact on these gender-related differences. The approach was to ask questions about each of the components of the GCSE. For the purposes of this paper the focus will be on the two main components of the examination: coursework and the written papers. Teachers' perceptions of students' attainment in the two subjects will also be reviewed.

DOES COURSEWORK CONTRIBUTE TO GENDER-RELATED DIFFERENCES IN PERFORMANCE?

Coursework has generally been welcomed as an effective motivator of pupils which has enhanced overall GCSE performance (HMI, 1990). In English, the possibility of following 100% coursework courses has proved very attractive to teachers and currently two thirds of GCSE entries in English are for such syllabuses. In contrast, mathematics was the only subject to delay the introduction of compulsory coursework until 1991 and this may reflect considerably less enthusiasm for coursework amongst mathematics teachers (IGRC, 1992).

There is a common perception that girls' success in coursework can be solely accounted for in terms of better organisational and presentational skills. However, this was not borne out by qualitative reviews of girls' and boys' coursework. The questions addressed in this part of the research were:

- **do girls actually do relatively better in coursework than in examinations?**
- **does coursework contribute disproportionately to the final grade?**

At face value it is possible to provide some straightforward answers. The first question can be answered in terms of the differences in mean marks between girls and boys on coursework relative to the differences on the examination papers. If there is a large difference in the mean marks on coursework but not on the examination papers then coursework performance may explain the difference. The issue of whether coursework contributes disproportionately to the final grade can be dealt with by looking at the proportion of marks which coursework contributes to the overall marks. If a pupil's final mark is 60% on a 50% coursework syllabus, did an average of 30 marks come from coursework and 30 from examinations or 40 from the coursework and 20 from the examinations?

However, such questions do not take account of the fact that boys' and girls' mean scores may conceal very different patterns of mark distributions. Cresswell (1990) has found that girls coursework marks tend to be more bunched than boys. Thus, for example, two identical mean scores could be the result of very different spreads of marks (both 4,4,4 and 1,2,9 give a mean of 4). This in turn makes the contribution of coursework marks to the overall grade distribution far more complex: if coursework marks are bunched and the exam marks spread widely then it is the examination that is likely to play the main role in determining pupils' rank order. This is because candidates will generally have much the same coursework mark and, even if the mean mark is high, this will not offer much discrimination.² It will therefore be the examination marks, on which pupils differ considerably, that contribute most to the overall grade distribution.

The issue of the contribution of coursework marks was addressed through the analysis of the 'achieved weighting' of components (e.g. Adams and Murphy, 1982). This analysis takes into account not only the mean marks but the spread of marks (the standard deviation) and the correlations between component and subject marks. A high achieved weighting on a paper would generally indicate that it was highly correlated to the subject (i.e. someone doing well on that paper would do well in the subject) and it would be the spread of marks that discriminate between pupils. However, using this procedure still leaves a number of unresolved technical problems (Cresswell, 1987).

A complementary analysis which goes beyond the overall mean marks is to look at the coursework contribution to the total mark **by grade**. If pupils gaining grade A got, on average, 45% of their overall mark from coursework and those at grade F got, on average, 55% then this may provide useful information about the role of coursework and of examination performance. It may also indicate how patterns of performance vary across the grade range.

Contribution of coursework (achieved weights): English

Table 2 shows the results of the achieved weights calculation for an the 50% coursework syllabus in English

² Discrimination is used in its technical form: 'the capacity of a test to distinguish among candidates of different levels of performance' (Good and Cresswell, 1988).

Table 2
Achieved weights of examination components
in English (50% coursework)

SEX	PAPER	MAX. MARKS	MEAN MARK	S.D.	r	WEIGHT	ACHIEVED WEIGHT
MALE	C/Work	50	28.93	9.18	0.93	0.527	53
	Exam	50	22.68	8.48	0.92	0.481	48
	Total	100	51.73	16.21			(101)
FEMALE	C/Work	50	32.50	8.44	0.92	0.510	51
	Exam	50	26.33	8.15	0.92	0.493	49
	Total	100	58.92	15.22			(100)

NB: S.D.= standard deviation; r= part-with-whole correlation (Product moment)
Paper Weighting (S.D.*r)/S.D.(Total); Achieved Weight = Paper Weighting*100

In English, it was discovered that coursework marks actually contribute more to the grade distributions of boys than of girls. For boys, coursework offers slightly more discrimination than the examination component (shown by the achieved weighting of 53 in Table 2). For girls, both the coursework and examination component make much the same contribution to the final grade (achieved weights of 51/49 respectively). Thus coursework seems to make a slightly larger contribution for boys at the subject level, than for girls. From this analysis, there was no compelling evidence that coursework contributed disproportionately to determining pupils' subject grades. Coursework does, however, increasingly contribute to the total mark as grades decrease, but this does not appear to be any different for girls or boys.

Contribution of coursework (achieved weights): mathematics

Table 3 shows the results of the achieved weights calculation for mathematics using a syllabus with 50% weighting of coursework. The results are for those pupils who were entered for the higher level of the examination with grades A-D available.

Table 3
Achieved weights of components in the higher level option
for mathematics (50% coursework)

SEX	PAPER	MAX. MARKS	MEAN MARK	S.D.	r	WEIGHT	ACHIEVED WEIGHT
MALE	P3	25	20.70	2.79	0.77	0.180	18
	P4	25	15.72	4.60	0.86	0.332	33
	P8 (C/W)	50	35.79	6.67	0.87	0.486	49
	Total	100	72.27	11.95			(100)
FEMALE	P3	25	19.99	2.87	0.78	0.209	21
	P4	25	15.13	4.44	0.84	0.348	35
	P8 (C/W)	50	36.71	5.70	0.82	0.436	44
	Total	100	71.89	10.73			(100)

NB: S.D.= standard deviation; r= part-with-whole correlation (Product moment)
Paper Weighting (S.D.*r)/S.D.(Total); Achieved Weight = Paper Weighting*100

In mathematics, girls tended to show a small but consistent mark advantage on coursework. This was offset by a similar small mark advantage for boys on the examinations. However, it is the examination papers in mathematics that are likely to act as the most powerful discriminator at the subject level. The contribution of coursework is much as intended in the syllabuses and at no level appears disproportionate.

In 1991 the percentage increase of girls and boys in mathematics gaining grades A-C was 4.4% and 2.2% respectively. As 1991 was the first year in which coursework was made compulsory, it is tempting to account for this extra increase in terms of the extra marks coursework may have generated, especially for the girls. However, the achieved weighting analysis suggests that such interpretations are likely to prove simplistic given the relatively modest contribution of coursework in most syllabuses.

ARE EXAMINATIONS A SOURCE OF GENDER-RELATED DIFFERENCES IN PERFORMANCE?

This strand of the research was quite an important one in the way it developed and implemented new methodologies for analysing and classifying examination papers. The aim was to go beyond the 'cosmetic' reviews of examination papers that had been carried out previously, but this required the development of a frame work within which to analyse the actual performance of boys and girls on the GCSE papers.

To develop the framework it was decided to go back to the Assessment of Performance Unit (APU) work carried out in English and mathematics between 1978 and 1988. Part of what the APU had accumulated was a detailed knowledge of what boys and girls knew and could do at ages 11 and 15 in specific categories of English and mathematics. The APU had developed classifications from language and maths surveys which enabled researchers to catalogue tasks in both subjects that were known to be favourable to one gender or the other.

The examination papers and questions on these papers were analysed under the APU classifications in order to predict whether the papers appeared favourable to one group or the other, to highlight patterns of syllabus coverage within papers and to help decipher which features of the GCSE examination questions may, if at all, introduce bias.

The papers for English and mathematics were analysed differently. In English, candidates' work was reviewed qualitatively. This was because holistic marking of questions, which is common practice in GCSE English, made it hard to trace why or how marks were lost or gained. Only an overall estimate of the candidates ability is recorded rather than calculated numerically from the outcome of tasks or sub-tasks within the paper. In mathematics, the nature of the examination papers allowed for detailed numerical analysis. Differences in mean marks between boys and girls were calculated and statistical significance tests were carried out to identify those questions which favoured one gender or the other.

Examination papers: English

From the analysis of the English papers it was found that only a narrow set of literacy skills were sampled for the examination. The questions set focused upon characters, their feelings and motivations; these are known to be types of questions which girls are good at. In terms of face validity, the papers seemed fair in their deliberate balance of gender specific texts. However, the scope and focus of the questions asked, together with the nature of the stimulus material, opened up possible differences in the ease or difficulty of articulating a response which interacted with the gender of candidates.

Therefore, it seems that the way English is examined through the GCSE has done little to close the performance gap between boys and girls. The examiners' awareness of equity issues seems to be influencing their choice of stimulus material. However, the type of tasks set to test candidates are not given the same attention.

Examination papers: mathematics

A more systematic analysis of the mathematics papers was possible due to the way the questions are marked. After classifying the question papers under the APU typology, an exercise in predicting the gendered outcomes of questions was carried out. From this exercise the findings were:

- i) when GCSE performances of girls and boys were analysed in relation to well-established differences found at age 15 (APU, 1988), it was identified that on topics where there had previously been relatively small, yet statistically significant differences (e.g. measurement of angles, geometrical transformations) boys and girls now appeared to be performing similarly. Only on those topics where the APU had identified substantial differences (e.g. rate and ratio, 3D shapes) did gender-related differences remain;
- ii) the analysis of GCSE examination questions in order to determine item bias suggested that overall papers were not biased. The specific context in which questions were set appeared to have little effect, though contextualised questions appeared to slightly favour boys and non-contextualised questions to slightly favour girls.

What is being shown in GCSE mathematics is that the performance gap between boys and girls is closing. Girls are doing as well as boys on examination papers and engaging well with the tasks chosen by the examiners to test the candidates

WHAT ARE TEACHERS' PERCEPTIONS OF MALE/FEMALE ATTITUDES AND MOTIVATION?

Information was sought about how teachers perceived boys' and girls' attainment and motivation in the subjects under scrutiny. Of particular interest were those perceptions that may be reflected in differential expectations and gender related differences in entry. The aim was also to investigate whether present day perceptions were similar to those that had been found to exist in the APU attitudinal study (Joffe et al, 1988). Teachers were asked to respond to a set of statements concerning pupil motivation and attitudes in relation to either English or mathematics.

Table 4 shows the results collected for English

Table 4
Pattern of teachers' responses to attitudinal statements: English
(N=100)

Statements*	Agree %	Not Sure %	Disagree %
(a) Girls less confident of succeeding in English	39.6	28.3	32.1
(b) Boys less anxious of failure in English	59.5	31.1	9.4
(c) Girls less likely to lose interest in the course	84.9	13.2	1.9
(d) Boys enjoy English less than girls do	71.5	27.6	1.0
(e) Girls believe English is more relevant for a career	40.0	38.1	21.9
(f) Boys are disadvantaged less by terminal examinations	60.9	33.3	5.7
(g) Girls are more concerned with neatness in written work	72.4	11.4	16.2

* These statements have been summarised to be presented in this table. It is important to note that they are comparative statements comparing one gender with the other.

From Table 4 we can see that for most of the statements roughly a third of respondents indicated that they were unsure whether there was a difference between the attitudes of boys and girls to English and how it is examined. Teachers were, however, very certain that girls are less likely to lose interest in the course than boys, and that girls enjoy English more than boys do. The majority of teachers also agreed that girls are more concerned with presentational features of written work. Teachers were less ready to attribute greater confidence to girls than they were to deny anxiety of failure on the behalf of boys.

Table 5 shows the response obtained for mathematics. Here, teachers seemed more sure that there were attitudinal differences between girls and boys. Some of the results were similar to old stereotypes: girls being less confident than boys about success in mathematics; boys seeming to be disadvantaged less by final examinations than girls, and girls being more concerned with neatness in

written work (quite the same as for English). However, teachers were also showing that boys are more likely to lose interest in the course and that girls enjoy mathematics more than boys do. Girls are now seeing mathematics less in the male domain and participating fully in the subject. Girls now see mathematics as relevant to future careers.

***Table 5**
Teacher s' responses to attitudinal statements: mathematics
(N=176)

Statements*	Agree %	Not Sure %	Disagree %
(a) Girls less confident of succeeding in maths	75.3	19.2	5.4
(b) Boys less anxious of failure in maths	67.5	20.9	11.6
(c) Girls less likely to lose interest in the course	71.0	13.7	15.3
(d) Boys enjoy maths less than girls do	68.7	14.5	16.8
(e) Girls believe maths is more relevant for a career	62.8	28.7	8.5
(f) Boys are disadvantaged less by terminal examinations	66.5	27.3	6.3
(g) Girls are more concerned with neatness in written work	76.4	12.2	11.4

* These statements have been summarised to be presented in this table. It is important to note that they are comparative statements comparing one gender with the other.

CONCLUSION

To identify all the factors which contribute to gender difference in performance would be an impossible task. Therefore, what the research study attempted to do was to focus on those considerations associated with the GCSE that may be amplifying the differences that exist. By looking more closely at boy/girl achievement on examination papers and coursework and investigating teachers' perceptions and attitudes towards the participation in, and attainment of, boys and girls in the GCSE, it was hoped to gain an understanding of why there continues to be gender gaps in performance.

Summary of main findings

The main findings of the research into equity and the GCSE can be summarised as follows:

- i) Gender differences in performance in GCSE English are substantial and show no sign of decreasing. Why the scale of differences in English (currently 14% grades A-C in favour of girls) has not led to more public concern. This is perhaps indicative of gender-related attitudes to the value of English;
- ii) Gender differences in performance in GCSE mathematics, which have traditionally favoured boys, are decreasing and have narrowed to a 2% difference (still in favour of boys) in the proportion of A-C grades obtained. This reflects other recent research (Linn, 1992);
- iii) Contrary to popular belief, coursework is not the sole explanatory factor for the better and improving performance of girls in the GCSE. In fact, from the 'achieved weighting' exercise it seems to have a limited effect in boosting girls overall subject marks. Small mark advantages in coursework by girls (especially in mathematics) tended to be offset by small mark advantages by boys in the written component. For English, GCSE statistics indicate that the gender gap is most pronounced for syllabuses that are **not** 100% assessed by coursework. However, this pattern needs cautious interpretation as English syllabuses with examination components tend to attract a larger entry from the independent sector (private schools);
- iv) Examination papers also cannot be singled out as the main cause of different outcomes in the GCSE. In mathematics, for example, analysis of the written papers in relation to well established differences identified by the APU studies, revealed that where there had been small, but significant, differences in boy/girl performance these were no longer present. Statistical

analysis of GCSE mathematics examination papers in order to determine bias suggested that overall the papers were not biased in favour of any one group. Evidence from English papers showed girls out performing boys in the majority of the categories of English tested. Both English examinations and coursework tended to emphasise those aspects of the subject in which girls are known (from APU surveys) to be substantially more proficient than boys.

- v) There is some dissonance, therefore, between anxieties about girls' performance in examinations and what actually happens. There is a widespread perception amongst teachers that girls have difficulty with examinations because of anxieties about failure and the pressures of the occasion. These attributed anxieties and worries do not, however, translate into erratic performances on a scale that can be detected from the statistics.
- vi) Some of the old stereotypical perceptions are changing. In mathematics, teachers related how girls are enjoying mathematics more and participating fully in the subject. Girls see mathematics in less functional terms and as no longer embedded in the male domain. The same cannot be said for boys and English. There seems to be a lack of awareness of the scale of the problem in this subject. From teacher comments it seemed that relatively modest success was not a great source of concern for boys who seemed to be 'coasting rather than struggling' in English.

What we have, therefore, is a complex web of factors that influence outcomes between boys and girls in the GCSE. Performance assessment, as delivered through coursework, cannot be singled out as the main variable that benefits girls and leads to their better performance overall. The degree of influence of coursework also tends to vary depending on the subject and how this assessment technique is valued by those who examine the GCSE. Teachers' and pupils' expectations, examination entry policies and emphases within syllabuses seem to be more significant factors when accounting for differences in performance.

For girls, equity within the GCSE is based more around curriculum issues and unequal entry systems within the examination. Coursework allows students to engage more with the subject, which may be partly responsible for girls' increased enjoyment of mathematics. Another positive element for girls and mathematics is the valuable work carried out by female mathematics educators in the mid to late 1980's (e.g. Burton, 1986). Girls have been focused upon as a group within mathematics over the last decade and the results have been more positive role models and a mathematics curriculum that integrates girls in the whole process. A negative element for girls and their attainment in the GCSE, especially in mathematics, has been the use of different levels of entry for the examination, each with its own restricted set of grades. This has provided a safety net into which girls fall as a consequence of teachers' (wrongly) continued beliefs that girls are distressed by final examinations.

The GCSE poses a different set of equity issues for boys. Large amounts of extended writing, found in the more 'female' orientated subjects, may be putting boys at a disadvantage but this is compounded by boys' own devaluation of these subjects. The relatively modest success of boys in English is not of great concern to them as a group nor to the teachers and examiners who promote this subject. There is a lack of concern generally at boys underperforming relative to girls in the GCSE.

The GCSE will be modified by the implementation of KS4. Here we will see less emphasis on extended tasks and coursework and more focus on final examinations. It will be interesting to monitor result patterns for boys and girls in the new style GCSE. The outcomes will be watched very closely by those who predict a new set of concerns for equity and the public examination system.

Acknowledgements:

This paper is based on research carried out by the ULEAC and NFER team. The other members were Gordon Stobart, Janet White, Mary Hayden and Keith Mason.

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